

(f) deciding by an account opening decision unit of the bank whether to accept or to reject the account application from the customer, based on the result of the authentication performed in the step (e).

14. (AS FOUR TIMES AMENDED) A user authentication method for cyberspace banking services of an open network, which are provided by a bank where the customer has an existing bank account, the user authentication method comprising:

(a) being supplied by the customer via the open network with first information which is produced by encrypting service request information and existing account information by using a customer secret key and further by a bank public key, wherein the service request information specifies service contents pertaining to the existing bank account and the existing account information is descriptive of the existing bank account owned by the customer in the bank;

(b) being supplied by the customer via the open network with second information which is produced by encrypting a customer public key by using the bank public key;

(c) decrypting the second information by using the bank secret key to obtain the customer public key;

(d) decrypting the first information by using the bank secret key and further by using the customer public key obtained in the step (c) so as to extract the service request information and the existing account information;

(e) authenticating by an account information verification unit of the bank the customer's identity, based on the existing account information extracted in the step (d); and

(f) deciding by an account opening decision unit of the bank whether to provide or not the service contents to the customer, based on the result of the authentication performed in the step (e).

REMARKS

In the Final Office Action mailed June 19, 2001, claims 1-3 and 8-11 were rejected under 35 USC 103(a) as being unpatentable over Weiss et al. (U.S. Patent 5,866,889) and Makoto (JP 402287767A), claim 10 was rejected under 35 U.S.C. 103 as being unpatentable over Weiss in view of Makoto and further in view of Micali (U.S. Patent No. 5,790,665), claims 5-7 were objected to as being dependent upon a rejected base claim. The foregoing objections and rejections are respectfully traversed.

In response to the Action, claims 1, 5, 8, 9, and 11 are amended. Claim 14 is amended for clarification. A Version with Markings to Show Changes Made is included herewith, beginning on page 13 of this Preliminary Amendment.

Claims 1-14 are pending and under consideration. Claims 1, 5, 8, 9, 11, 12, 13, and 14 are independent claims; claims 2-4 depend from claim 1; and claim 10 depends from claim 8.

Present Invention

While conventional home banking services allow customers to access their established bank accounts via networks using authentication/identification procedures on an offline basis, the present invention enables a customer to open a bank account online, without visiting the bank's offices or registering his/her data with a special certifying authority.

In the present invention, first bank processing means requests a confirmation from second bank processing means (or a second bank system) of the customer=s existing bank account. More particularly, in the present invention, a bank system opens a new customer account by using information about an existing account owned by the requesting customer. The foregoing feature of the present invention permits the bank system to authenticate the customer online, with the need for calling any special certifying authorities. Support for the foregoing feature of the present invention is found in the specification, page 10, at lines 2-7 of the present application. As disclosed in the foregoing passage of the present specification, the above-mentioned features of the present invention "eliminate the need of special certifying authorities and simplify the account opening procedure".

That is, in the present invention, a cyberspace banking service enables a customer to open a bank account online without registering his/her data with a special certifying authority. The services are provided by a plurality of banks interconnected via an inter-bank network, not via an open network.

In the present invention, in contrast to the foregoing references relied upon, either alone or in combination, the target bank processing means transmits new account acknowledgement information to the terminal station, as disclosed in the present specification, page 9, at lines 13-25.

Weiss

Weiss discloses a system for managing financial accounts by a priority allocation of funds among those accounts. More particularly, Weiss discloses the management of investments in asset accounts and credit facilities within a client account. In contrast to the present invention, Weiss discloses the use of a certifying authority (which is described in the present specification, page 2, at line 20 to page 3, at line 7) as being part of the related art. The foregoing features of the Weiss apparatus are disclosed as the use of "outside services or agencies" in column 13, at lines 1-4 of Weiss. Moreover, as disclosed in the "ACCOUNT INTRODUCTION SYSTEM AND STEP (600)" and the "PERSONAL PROFILE SYSTEM AND STEP (700)" sections of Weiss, the Weiss apparatus performs a credit check by contacting a credit bureau. Weiss, therefore, suggests the use of traditional credit bureaus (i.e., special certifying authorities).

Moreover, Weiss discloses that the first bank processing means performs a credit check by contacting a credit bureau when opening an account. That is, Weiss suggests the use of "outside service or agencies" for credit checking.

On the other hand, a feature of the present invention is that a bank system opens a new customer account by using information about an existing account owned by the requesting customer. As a result, this feature permits the bank system to authenticate the customer online, without the need for calling any special certifying authorities, as described in the present specification, page 10, lines 2-7.

Makoto

Makoto discloses a system and method in which a customer may open a bank account. In the Makoto apparatus, a first bank requests bank data from a second bank so that the bank data can be ascertained and verified, thereby proving accurate banking information from the second bank to the first bank in which the customer is opening a new account. However, it is an object to save the customer the trouble of filling out an application form and to decrease complex affairs of the clerk.

Micali

Micali discloses an anonymous information retrieval system in which the identity of a

requesting user accessing a single data base is hidden, but which returns the item requested from the data base to the requesting user. The Micali method makes use of encryption and keys to accomplish the above-mentioned anonymous information retrieval.

Weiss in view of Makoto discloses traditional credit bureaus (that is, traditional certifying agencies) in a banking system in which customers do not have to be troubled by filling out application forms and in which the complex work of the clerk is decreased.

Weiss in view of Makoto and further in view of Micali discloses traditional credit bureaus (that is, traditional certifying agencies) in a banking system in which customers do not have to be troubled by filling out application forms and in which the complex work of the clerk is decreased, and in which encryption keys are implemented.

On the other hand, and in contrast to the foregoing references relied upon, either alone or in combination, each of independent claims 1, 8, 9, and 11 of the present application recites (using the recitation of claim 1 as an example) "wherein said first bank processing means transmits new account acknowledgement information to the terminal station".

The foregoing dependent claims recite patentably distinguishing features of their own. For example, claim 2/1 recites "the first network includes an open network, and the second network includes an inter-bank network which interconnects a plurality of bank systems including the first and second banking systems".

Withdrawal of the foregoing rejections is respectfully requested.

Also in the Action, the Examiner asserted that claims 5-7 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and that claims 12-14 are allowable over the art of record. Claim 5 is amended into independent form, and claims 6 and 7 depend from claim 5. It is understood and therefore submitted that claims 5-7 and 12-14 are allowable.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the following claims 1, 5, 8, 9, 11, and 14 as follows:

1. (FIVE TIMES AMENDED) A network transaction system in which a customer's terminal station is connected to a first bank system via [a] an open network and the first bank system is connected to a second bank system via an inter-network, the customer having an existing bank account in the second bank system and attempting to newly open a bank account in the first bank system, the network transaction system comprising:

customer processing means disposed at the terminal station and coupled to the open network, said customer processing means for applying for a new bank account by supplying via the open network the first bank system with existing account information descriptive of the existing bank account owned by the customer in the second bank system;

first bank processing means disposed at the first bank system and coupled to the first and inter-networks, said first bank processing means for requesting via the inter-networks the second bank system to make a confirmation of the existing bank account while forwarding the existing account information received from the customer processing means to the second bank system over the inter-network, and for opening the applied new bank account based on a confirmation response message received via the inter-network from the second bank system describing a result of the confirmation of the existing bank account, wherein the first bank processing means authenticates the customer based on the confirmation; and

second bank processing means disposed at the second bank system and coupled to the inter-network, said first bank processing means for confirming validity of the existing bank account upon request from said first bank processing means, and for returning the confirmation response message to said first bank processing means to report the result of the confirmation of the existing bank account, wherein said first bank processing means transmits new account acknowledgement information to the terminal station.

2. (AS ONCE AMENDED) A network transaction system according to claim 1, wherein the first network includes an open network, and the second network includes an inter-bank network which interconnects a plurality of bank systems including the first and second banking systems.

3. (AS ONCE AMENDED) A network transaction system according to claim 1, wherein:

 said customer processing means supplies the first bank with account application information that is necessary for opening the new bank account, and

 said account application information includes at least the customer's name, address, company, bank identification code of the first bank, and desired password for the new bank account.

4. (AS UNAMENDED) A network transaction system according to claim 1, wherein the existing account information includes at least bank identification code of the second bank system, account number of the existing bank account, and password of the existing bank account.

5. (TWICE AMENDED) A network transaction system [according to claim 1] in which a customer's terminal station is connected to a first bank system via a open network and the first bank system is connected to a second bank system via an inter-network, the customer having an existing bank account in the second bank system and attempting to newly open a bank account in the first bank system, the network transaction system comprising:

customer processing means disposed at the terminal station and coupled to the open network, said customer processing means for applying for a new bank account by supplying via the open network the first bank system with existing account information descriptive of the existing bank account owned by the customer in the second bank system;

first bank processing means disposed at the first bank system and coupled to the first and inter-networks, said first bank processing means for requesting via the inter-networks the second bank system to make a confirmation of the existing bank account while forwarding the existing account information received from the customer processing means to the second bank system over the inter-network, and for opening the applied new bank account based on a confirmation response message received via the inter-network from the second bank system describing a result of the confirmation of the existing bank account, wherein the first bank processing means authenticates the customer based on the confirmation; and

second bank processing means disposed at the second bank system and coupled to the inter-network, said first bank processing means for confirming validity of the existing bank

account upon request from said first bank processing means, and for returning the confirmation response message to said first bank processing means to report the result of the confirmation of the existing bank account, wherein said customer processing means comprises:

(a1) customer key generation means for generating a customer secret key and a customer public key,

(a2) customer encryption means for assembling an account application message to be sent to said first bank processing means by:

encrypting account application information necessary for opening the new bank account by using the customer secret key and further by using a first bank public key,

encrypting the customer public key and a second bank identification code by using the first bank public key,

encrypting the existing account information by using the customer secret key and further by using a second bank public key, and

combining the encrypted account application information, the encrypted customer public key, the encrypted second bank identification code, and the encrypted existing account information, and

(a3) customer decryption means for obtaining new account acknowledgment information by decrypting an application response message received from said first bank processing means by using the customer secret key and further by using the first bank public key.

6. (NOT AMENDED HEREIN) A network transaction system according to claim 5, wherein said first bank processing means comprises:

(b1) first bank key generation means for generating a first bank secret key and the first bank public key,

(b2) first bank decryption means for:

obtaining the customer public key and the second bank identification code by decrypting the encrypted customer public key and the encrypted second bank identification code, as part of the account application message received from said customer processing means, by using the first bank public key,

obtaining the account application information by decrypting the encrypted account application information, as part of the account application message received from said

customer processing means, by using the first bank secret key and further by using the obtained customer public key, and

obtaining the result of the confirmation of the existing bank account by decrypting the confirmation response message from the second bank processing means by using the second bank public key, and

(b3) first bank encryption means for:

encrypting confirmation request information by using the second bank public key, and

assembling a confirmation request message to be sent to said second bank processing means by combining the encrypted confirmation request information and the encrypted existing account information received from the customer processing means, wherein the confirmation request information includes a first bank identification code, the customer public key, and a confirmation request number.

7. (AS ONCE AMENDED) A network transaction system according to claim 6, wherein said second bank processing means comprises:

(c1) second bank key generation means for generating a second bank secret key and the second bank public key,

(c2) second bank decryption means for:

obtaining the first bank identification code, the customer public key, and the confirmation request number by decrypting the encrypted confirmation request information by using the second bank secret key and further by using the first bank public key, and

obtaining the existing account information by decrypting twice the encrypted existing account information by using the second bank secret key and further by using the above-obtained customer public key, and

(c3) second bank encryption means for encrypting the result of the confirmation of the existing bank account, the second bank identification code, and the confirmation request number by using the second bank secret key, and thereby assembling the confirmation response message to be sent to said first bank processing means.

8. (FOUR TIMES AMENDED) A network transaction system in which a customer's terminal station and a bank system are interconnected via a network, the customer having an existing bank account in the bank system and attempting to open a new bank account in the same bank system, banks included in the bank system being connected to each

other through an inter-bank network, the network transaction system comprising:

customer processing means disposed at the terminal station and coupled to the network, said customer processing means for applying for a new bank account by supplying the bank system with existing account information descriptive of the existing bank account owned by the customer in the bank system; and

bank processing means disposed at the bank system and coupled to the network, said bank processing means for making a confirmation of the existing bank account through the inter-bank network, for authenticating through the inter-bank network the customer based on the confirmation, and for opening the applied new bank account based on the result of the confirmation of the existing bank account, wherein said bank processing means transmits new account acknowledgement information to the terminal station.

9. (FOUR TIMES AMENDED) A terminal station, linked to a plurality of bank systems, for use by a customer who wishes to newly open a bank account in a first bank system and has an existing bank account in a second bank system, the first and second bank systems being among the plurality of bank systems connected to each other through an inter-bank network, the terminal station comprising:

processing means for sending, along with account application information necessary for opening a bank account in the first bank system, existing account information pertaining to the existing bank account owned by the customer in order to allow the first bank system to request via the inter-bank network the second bank system to authenticate the customer's identity; and

an output/storage unit outputting and storing the account application information and the existing account information, wherein the first bank system authenticates via the inter-bank system the customer based on the existing account information, wherein said processing means transmits new account acknowledgement information to the terminal station.

10. (AS TWICE AMENDED) The terminal station according to claim 9, wherein said processing means comprising an encrypting unit creating an account application message to be sent to the first bank system, the account application message being a combination of data items obtained by the encrypting unit by:

encrypting the account application information by using a customer secret key and further by a first bank public key,

encrypting a customer public key and a second bank identification code by using the

first bank public key, and

encrypting the existing account information by using the customer secret key and further by using a second bank public key.

11. (FOUR TIMES AMENDED) A user authentication method for cyberspace banking services of an open network, which services are provided by a plurality of banks interconnected via an inter-bank network, the plurality of bank systems including a first bank and a second bank, the customer having an existing bank account in the second bank and newly issuing an account application for a bank account to the first bank, the user authentication method comprising :

(a) sending via the open network account application information and existing account information from the customer to the first bank, wherein the account application information is information necessary for opening a new bank account in the first bank and the existing account information is information descriptive of the existing bank account owned by the customer in the second bank;

(b) forwarding via the open network the existing account information from the first bank to the second bank for requesting the second bank system to make a confirmation of the existing bank account;

(c) confirming via the inter-bank network the existing bank account in the second bank, and authenticating via the inter-bank network the customer based upon the result of the confirmation; [and]

(d) deciding whether to accept or to reject the account application, based on the result of the confirmation performed in said step (c); and

(e) transmitting new account acknowledgement information to a terminal station coupled to the first bank.

12. (AS THRICE AMENDED) A user authentication method for cyberspace banking services of an open network, which services are provided by a plurality of banks interconnected via an inter-bank network, the plurality of bank systems including a first bank and a second bank, the customer having an existing bank account in the second bank and newly issuing an account application for a bank account in the first bank, the user authentication method comprising :

(a) being supplied by the customer via the open network with first information which

is obtained by encrypting account application information necessary for opening a new bank account by using a customer secret key and further by a first bank public key;

(b) being supplied by the customer via the open network with second information which is obtained by encrypting a customer public key and a second bank identification code by using the first bank public key;

(c) being supplied by the customer via the open network with third information which is obtained by encrypting existing account information by using the customer secret key and further by using a second bank public key, wherein the existing account information is descriptive of the existing bank account owned by the customer in the second bank;

(d) decrypting the second information by using the first bank secret key to obtain the customer public key and the second bank identification code;

(e) decrypting the first information by using the first bank secret key and further by using the decrypted customer public key to obtain the account application information;

(f) encrypting the second bank identification code, the customer public key, and confirmation request information by using the second bank public key to obtain fourth information;

(g) sending via the inter-bank network the third information and the fourth information to the second bank, thereby requesting via the inter-bank network the second bank to authenticate the customer based on the existing account information contained in the third information;

(h) receiving via the inter-bank network a response from the second bank that reports the result of the authentication; and

(i) deciding whether to accept or to reject the account application from the customer.

13. (AS THRICE AMENDED) A user authentication method for cyberspace banking services of an open network, which are provided by a bank where the customer has an existing bank account, the user authentication method comprising:

(a) being supplied by the customer via the open network with first information which is produced by encrypting account application information and existing account information by using a customer secret key and further by a bank public key, wherein the account application information is information necessary for opening a new bank account and the existing account

information is descriptive of the existing bank account owned by the customer in the bank;

(b) being supplied by the customer via the open network with second information which is produced by encrypting a customer public key by using the bank public key;

(c) decrypting the second information by using the bank secret key, thereby obtaining the customer public key;

(d) decrypting the first information by using the bank secret key and further by using the customer public key obtained in the step (c), thereby extracting the account application information and the existing account information;

(e) authenticating by an account information verification unit of the bank the customer's identity, based on the existing account information extracted in the step (d); and

(f) deciding by an account opening decision unit of the bank whether to accept or to reject the account application from the customer, based on the result of the authentication performed in the step (e).

14. (FOUR TIMES AMENDED) A user authentication method for cyberspace banking services of an open network, which are provided by a bank where the customer has an existing bank account, the user authentication method comprising [the steps of]:

(a) being supplied by the customer via the open network with first information which is produced by encrypting service request information and existing account information by using a customer secret key and further by a bank public key, wherein the service request information specifies service contents pertaining to the existing bank account and the existing account information is descriptive of the existing bank account owned by the customer in the bank;

(b) being supplied by the customer via the open network with second information which is produced by encrypting a customer public key by using the bank public key;

(c) decrypting the second information by using the bank secret key to obtain the customer public key;

(d) decrypting the first information by using the bank secret key and further by using the customer public key obtained in the step (c) so as to extract the service request information and the existing account information;

(e) authenticating by an account information verification unit of the bank the customer's identity, based on the existing account information extracted in the step (d); and

(f) deciding by an account opening decision unit of the bank whether to provide or

not the service contents to the customer, based on the result of the authentication performed in the step (e).